Indian J. Phys. **71B** (2), 197 (1997)

IJP B
—an international journal

BOOK REVIEW

Boundary Value Problems, Schrödinger Operators, Deformation Quantization
(Advances in Partial Differential Equations—Mathematical Topics, Vol. 8)
edited by Michael Demuth, Elmar Schrohe and Bert-Wolfgang Schulze (editor-in-chief)
Academic Verlag GmbH · Berlin, 1995
353 pages, illustrated; price · DM 130,—(Hardcover); ISBN 3-05-501699-8

This book is the eighth in the series 'Mathematical Topics'. It deals with advances in Partial differential equations. It happens to be the second book in partial differential equations—the first one was the fifth volume of the above mentioned series and a significant part of the book under review cannot be read without referring to the earlier book. This is a serious short coming.

The high point of the book is the complete proof of the index theorem for deformation quantization. This is the article by Fedorov. It is detailed in every respect, beginning with the necessary notions and theorems of complex K-Theory followed by the basic concept of deformation quantization on a symplectic manifold M, leading to the index theorem for quantum algebras. This chapter, which is self-contained, makes the book worthwhile.

Algebra of pseudo differential boundary value problems on a manifold with conical singularities is discussed in the article by Schrohe and Schulze. While this is an article whose first part appears in an earlier volume, the authors have taken the trouble of introducing the basic notions in an introductory section. The two remaining sections deal at length with cone algebras without and with asymptotics. The article by Schulze on obtaining the variable discrete asymptotics of solutions of elliptic problems, suffers from the defect we have mentioned earlier. An introductory section summarizing the first five sections which appear in a previous volume (this article starts with Section 6) would have been immensely helpful.

In summary, the book gives an extremely scholarly account of recent advances in partial differential equations, but has the problem of not always being self-contained.

JAYANTA K BHATTACHARJEE
Department of Theoretical Physics,
Indian Association for the Cultivation of Science,
Jadavpur, Calcutta-700 032